



U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

400 Seventh Street, S.W.  
Washington, D.C. 20590

DOT-E 10019  
(FIFTH REVISION)

MAR 9 2000

EXPIRATION DATE: February 28, 2002

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Structural Composites Industries  
Pomona, CA
2. PURPOSE AND LIMITATIONS:
  - a. This exemption authorizes the manufacture, mark, sale and use of a non-DOT specification fiber reinforced plastic (FRP) full wrapped composite (FC) cylinder conforming with DOT FRP-1 Standard, except as specified herein, for the transportation in commerce of the materials authorized by this exemption. This exemption provides no relief from any Hazardous Materials Regulation (HMR) other than as specifically stated herein.
  - b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171- 180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302(a)(1) and 175.3 in that non-DOT specification cylinders are not authorized.
5. BASIS: This exemption is based on the application of Structural Composites Industries dated January 12, 2000, submitted in accordance with § 107.109.

MAR 9 2000

Continuation of DOT-E 10019 (5th Rev.)

Page 2

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi- fication Number	Packing Group
Air, compressed (with up to 39 percent by volume oxygen content)	2.2	UN1002	N/A
Nitrogen, compressed	2.2	UN1066	N/A
Oxygen, compressed	2.2	UN1072	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification fiber reinforced plastic (FRP) full wrapped composite (FC) cylinder made in accordance with SCI's specification SCI Special Report 88778, on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA) and conforming with DOT FRP-1 Standard, (178.AA), Revision 2 dated February 15, 1987, except as follows:

§ 178.AA-4 Duties of Inspector.

\* \* \*

(b) (Add) In lieu of testing for filament material properties by the exemption holder, a certificate by the filament manufacturer is acceptable provided that the procurement document specifies strength and quality requirements and that the supplied material is certified to those requirements.

\* \* \*

§ 178.AA-5 Material.

(a) Aluminum liner must be 6061 alloy and T6 temper or 6010 alloy subjected to a solution heat treatment and aging appropriate for the alloy as indicated in the application.

MAR 9 2000

Continuation of DOT-E 10019 (5th Rev.)

Page 3

(b) Filament material must be commercial type-S fiberglass and Kevlar 49 conforming with Aerospace Material Specification (AMS) 3901. Filaments must be tested in accordance with ASTM D 2343 (strand test) and ASTM D 3317 (denier test). Strand strength and denier must be as follows:

(1) Strand strength = 450,000 min.

(2) Denier = Not less than 90 percent of the nominal value specified in AMS 3901.

\* \* \* \* \*

§ 178.AA-9 Thermal treatment.

(a) The aluminum alloy liners must be solution heat treated and aged as follows after all forming operations and prior to pressurizing and overwrapping.

(1) Alloy 6061 liners must be solution heat treated and aged to the T-6 temper.

(2) Alloy 6010 liners must be solution heat treated and aged as appropriate for the alloy indicated in the application.

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§ 178.AA-12 Destructive tests.

\* \* \*

(b) Applies except that the rate of cycling may not exceed 10 cycles per minute.

§ 178.AA-18 Design qualification tests.

\* \* \*

(d) Applies except that the rate of cycling may not exceed 10 cycles per minute.

MAR 9 2000

b. TESTING - Each cylinder must be reinspected and hydrostatically retested every three years in accordance with § 173.34(e), as prescribed for DOT 3HT specification cylinders, except that the rejection elastic expansion does not apply and the permanent volumetric expansion may not exceed 5 percent of the total volumetric expansion at test pressure. Retest dates must be stamped on the exposed metallic surface of the cylinder neck or marked on a label securely affixed to the cylinder and overcoated with epoxy near the original test date. Reheat treatment or repair of rejected cylinders is not authorized.

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, may reoffer it for transportation provided no modifications or changes are made to the package and it is offered for transportation in conformance with this exemption and the HMR.

c. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this exemption must be marked with a registration symbol designated by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

e. A current copy of this exemption must be maintained at each facility where the package is manufactured under this exemption. It must be made available to a DOT representative upon request.

f. Cylinders may not be used for underwater breathing purposes.

MAR 9 2000

- g. A cylinder is not authorized 15 years after the date of manufacture.
  - h. A cylinder that has been subjected to fire may not be returned to service.
  - i. Cylinders used in oxygen service must conform with the provisions of § 173.302(a)(5).
  - j. The cylinder must be packaged in accordance with § 173.301(k).
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only, and passenger-carrying aircraft.
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel or aircraft used to transport packages covered by this exemption. The shipper shall furnish a copy of this exemption to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
  - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

MAR 9 2000

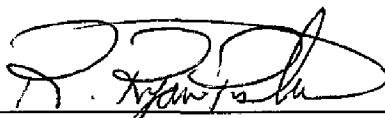
Continuation of DOT-E 10019 (5th Rev.)

Page 6

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must also inform the AAHMS, in writing, as soon as practicable of any incidents involving the package and shipments made under this exemption.

Issued at Washington, D.C.

MAR 9 2000

  
for Robert A. McGuire  
Acting Associate Administrator for  
Hazardous Materials Safety

(DATE)

Address all inquiries to: Associate Administrator for  
Hazardous Materials Safety, Research and Special Programs  
Administration, Department of Transportation, Washington, D.C.  
20590. Attention: DHM-31.

The original of this exemption is on file at the above office.  
Photo reproductions and legible reductions of this exemption  
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prohibited.

Copies of exemptions may be obtained from the AAHMS, U.S.  
Department of Transportation, 400 7th Street, S.W.,  
Washington, DC 20590-0001, Attention: Records Center, 202-366-  
5046.

Dist: FAA, FHWA, FRA, USCG  
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